VIRAL PNEUMONIAS*

HOBART A. REIMANN

Professor of Medicine, Jefferson Medical College

INTEREST in the form of pneumonia commonly called "Virus" pneumonia has increased rapidly in the past four years, and since the cause of the disease in the majority of cases is unknown, confusion in terminology has arisen. In the Army Medical Service, the disease is officially called "Primary Atypical Pneumonia, Etiology Unknown" to avoid error, since agents other than filterable viruses may cause a similar syndrome, and it is only surmised that a filterable virus is operative in most of the cases observed. The term is broad, however, and may include any pneumonia not conforming to the typical clinical lobar form. Even the popular term "virus" pneumonia is not specific. It is euphonic, but is as inclusive and as ungrammatic as the term "bacterium" pneumonia would be. The adjective "viral" is preferable. There are many kinds of bacterial pneumonias and perhaps as many of viral pneumonias, judging by the number and variety of filterable agents recently associated with them. Viral pneumonia is therefore a syndrome of which there are many causes. Reviews of the subject were recently published.[1,2] It is hoped that eventually, all of the causes will be discovered and simple diagnostic tests will be perfected to enable one to give specific names to the various viral pneumonias as in dealing with the bacterial ones. Some success in this direction has already been attained.

Several authors regard "Viral" pneumonia as a new disease, but the experience of others,[3] together with its diverse causation, certainly indicates that it is not. Descriptions of similar disease in medical publications decades old have been pointed out, [1,3b] To be sure, such descriptions can be found, but it seems futile to compare them with those of the present because of the emphasis then placed on clinical and pathologic aspects, in contrast with the current etiologic viewpoint. In retrospect it seems most likely that the viral pneumonias were considered as influenzal pneumonia, bronchopneumonia, migratory pneumonia, in-

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terstitial pneumonia[4] or capillary bronchiolitis, and that many cases were not recognized as pneumonia at all because of the paucity of physical signs and because roentgenograms were seldom made.

Another point was recently raised[5] as to whether or not "viral" pneumonia, as we now see it, is but a variant of the 1918 influenza, capable of assuming pandemic proportions and of clinical identity with pandemic influenza. It may be, of course, but in all reports thus far published there is a remarkable freedom from complications with pyogenic bacteria which played so fatal a role in the 1918 pandemic, and the mortality rate is nil in otherwise healthy persons. In fact, pneumococci of any type are seldom found in the nasopharynx during "viral" pneumonia, even less often than in healthy persons, 50 per cent of whom are said to be carriers of pneumococci.

Incidence: It may be only a coincidence that "viral" pneumonias sprang into prominence in 1938, after the introduction of sulfapyridine as a curative for pneumococcal pneumonia, but they have without doubt increased both in relative and in actual numbers since then. Several reasons may account for this, named in the order of probability: (1) Their actual increase may be a manifestation of the natural fluctuation in incidence common to many infectious diseases; (2) Diagnosis is made more frequently because of interest in the disease and because of the freer use of roentgenography; and (3) A diminution of the incidence of pneumococcal pneumonia induced naturally and also artificially with chemotherapy emphasizes a relative increase of unusual forms to which little attention has been paid in the past.

In our experience last year[2] "viral" pneumonias comprised about 15 per cent of the pneumonias admitted to the hospital; in a Detroit hospital[6] the proportion was as 6 is to 7, but thus far in the late months of 1942, "viral" pneumonias have outnumbered pneumococcal pneumonias on my service in the ratio of 3 to 1. It was thought that this increase occurred partly because pneumococcal pneumonia is now largely cured at home and that only patients with pneumonia refractory to chemotherapy come to the hospital. It has also been my impression that the undesirable custom of making diagnoses by exclusion is growing. Instead of troubling to determine the causal agent, chemotherapy is often used as a therapeutic test. In one report, the term "sulfonamide resistant pneumonia" was actually used.[7]

Etiology: The viruses of psittacosis, vaccinia, variola, measles and

influenza were long known to cause forms of viral pneumonia. More recently the viruses of varicella, lymphocytic choriomeningitis, a psittacosis-like disease (ornithosis) and other ones less well defined[8,9,10] have also been associated with the disease. Furthermore, the viruses of psittacosis and ornithosis have been found to be closely related to those of lymphogranuloma venereum and mouse meningopneumonitis, suggesting that some of these viruses may be widespread in birds and animals, which in turn may serve as sources of infection for Man. Several more viruses implicated in pneumonia have just been added to the list. A virus was isolated from sick cats belonging to a farmer's family afflicted with pneumonia. Evidence suggests that the same virus infected the human patients.[15] A similar circumstance was reported by Baker,[11] but in this case the causative virus was different, and preliminary studies strongly suggest its relation to the psittacine group. If relationship does exist and if the precedent of nomenclature for the psittacine group is valid, the name "alourosis" may be suggested for this infection in cats. The existence of this virus adds to the fascinating problem of epidemiology concerning the relationship and transference of viruses between birds, animals and Man. The question arises as to whether each of these apparently closely related viruses are descendants of a single parent form modified by adaptation in different hosts, whether one may change into another, if each represents a specific "type" of a genus, analogous with types of pneumococci, and each type selects the host in which it is best fitted to survive, or if they are identical. Indirect evidence already suggests that viruses of this group are implicated in from 15[12,16] to 50[2] per cent of cases of human "viral" pneumonias.

Eaton and his associates[13] recently succeeded in transmitting and establishing a virus presumably obtained from patients with viral pneumonia in the cotton rat. The evidence of a causal relationship of the viruses to the pneumonia in patients, however, is incomplete because of irregular results of neutralization tests.

General Forms of the Syndrome: According to my experience,[2] it would seem that the "viral" pneumonias fall into two general groups:

A. As a sporadic, non-seasonal, slightly contagious, systemic disease, with a relatively long incubation period of ten days to two weeks, occurring in isolated instances or in small groups of cases of varying severity, centering around a single source of infection. The epidemic disease in infants described by Adams probably falls into this classification.

In adults, the disease was at first confused[8] with psittacosis which it strongly resembles. It is probable that the viruses of the composite psittacine group of infections, lymphocytic choriomeningitis and the viruses established in the mongoose and in cotton rats among others yet unknown are operative. The disease appears to be a systemic one, often with splenomegaly and nervous symptoms, in which the lungs are incidentally affected. Manifestations of pulmonary involvement may be delayed for days. This feature has given rise to another undesirable term, "silent bronchopneumonia."[14] The upper part of the respiratory tract is seldom affected to the extent that it is in the other group. In the individual case, however, certain clinical signs and symptoms such as the normal or subnormal leukocyte count, the roentgenographic appearance of the lungs, sweating, unproductive paroxysmal cough, bradycardia, photophobia and the duration are the same as those in the next group.

B. As the severest cases in large epidemics of mild, highly contagious, local disease of the respiratory tract, commonly called colds, grip or influenza, occurring usually in the cold months. The incubation period appears to be short, a matter of one or several days. Generally the disease is indistinguishable from Influenza A or Influenza B, yet it is caused by a different agent or agents, and the three or more specific diseases often occur together in varying proportions in the same epidemic. It seems to be primarily a mild infection of the upper part of the respiratory tract which in the occasional case already affects the lungs or spreads downward to cause pneumonia and severe disease.

If general classification on this broad clinical or epidemiologic basis is correct, a tentative loose arrangement of the various causes of viral pneumonias may be listed as shown in Table I.

It is obvious that further progress in differentiation and classification awaits the discovery of the causative agents in whatever form the syndrome occurs.

Specific Therapy: All observers agree that the sulfonamide compounds have no favorable influence on viral pneumonias. In general, the signs, symptoms and results of laboratory tests of viral pneumonia are distinctive enough to permit quick differentiation from the usual forms of bacterial pneumonia, so that the practice of giving sulfonamides routinely to all patients with pneumonia regardless of the cause is unjustified. It also is unwise to make diagnoses by using sulfonamide compounds as a therapeutic test. In doubtful cases, or when evi-

TABLE I

Sporadic Non Seasonal Forms	*Epidemic, Winter Month Forms*
Varicella	Influenza A
Vaccinia	Influenza B
Variola	Measles
Psittacosis (parrot, parrakeet, etc. pneumonia)	"Cotton rat" virus(?)
Ornithosis (pigeon, chicken, etc. pneumonia)	Unknown varieties (colds, grip, etc.)
Ailourosis(?) (cat pneumonia)[11]	
Lymphocytic choriomeningitis	
"Mongoose" virus(?)	
"Cotton rat" virus(?)	
Feline pneumonia virus[15]	
Ill-defined[8,9] and unknown varieties	

dence suggests that bacteria sensitive to sulfonamide compounds have become secondary invaders, or if an epidemic of pneumococcal pneumonia is extant, or if pneumococci of the lower numbered types are present in the nasopharynx, chemotherapy is justified, but it should be discontinued if, in a reasonable period, the disease fails to respond.

Convalescent serum from patients who have recently recovered from a viral pneumonia has also been used in therapy and a few clinicians claim to have observed beneficial effects. In view of the diverse causes of the syndrome, this method of treatment seems to be empirical to say the least. Even specific convalescent serum once thought to be helpful in psittacosis, has long since been given up as useless.

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